



# DX NEWS

The magazine of the  
National Radio Club

SINCE 1933

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### CPC Calendar ...

Date	Station	From/To (EST)
Nov. 4	WITZ-990	5:30/6:00 AM
Nov. 4	KVOX-1280	6:00/6:30 AM
Nov. 4	KLEY-1130	6:30/7:00 AM
Nov. 11	WSYB-1380	5:30/6:00 AM
Nov. 12	WARU-1600	2:00/2:30 AM
Nov. 12	KRXY-1600	2:30/3:00 AM
Nov. 12	KORN-1490	5:00/5:30 AM
Dec. 1	KLER-1300	7:45/8:00 AM
Dec. 3	KOJM-610	2:10/2:30 AM
Dec. 10	KUMA-1290	3:05/3:30 AM
Dec. 16	KTIL-1590	3:00/3:30 AM

**WITZ-940**, P.O. Box 167, Jasper, IN 47546 will present a Special DX TEST on Sunday November 4, 1990 from 0530 to 0600 EST. The test will consist of tones, music, voice and Morse code ID's. Our thanks to Mr. Gary Lee for conducting this test arranged by the Colorado CPC Machine for the National Radio Club.

**KVOX-1280**, P.O. BOX 97, Moorhead, MN 56561 will present a unique DX TEST on November 4, 1990 from 0600 to 0630 ELT. A special announcement for the National Radio Club will be aired during this time period. This announcement will contain a Morse code ID. This will be mixed with KVOX's normal music programming. KVOX will be using its nighttime facility. Our thanks to Mr. Bob Holtan General Manager for this fine opportunity! Arranged by the Colorado CPC Machine for the National Radio Club.

**KLEY-1130**, KLEY Drive, Wellington, KS 67152 will present a special DX TEST on Sunday Morning November 4, 1990 from 0630 to 0700 EST. This test will consist of test tones, march music, voice and Morse code ID's. Our thanks to Mr. Vernon Napier, Chief Operator for this test. Arranged by the Colorado CPC Machine for the National Radio Club.

**WSYB-1380**, P.O. BOX 249, Rutland VT 05701

will conduct a special DX TEST on November 11, 1990 from 0530 to 0600 EST. This test will consist of normal AdCon music program with interspersed voice and Morse code ID's. Our thanks to Mr. Tom Elmore for this test. Arranged by the Colorado CPC Machine for the National Radio Club.

**WARU-1600**, P.O. BOX A, Peru, IN 46970 will conduct a DX TEST on November 12, 1990 from 0200 to 0230 EST. This test will consist of Voice ID's, Code ID's and March music. We would like to thank Chief Engineer Mr. James L. Swearingen for this test. Arranged by the Colorado CPC Machine for the National Radio Club.

**KRXY-1600**, 7075 W. Hampden Ave. Denver, CO 80227 will conduct a SPECIAL DX TEST on November 12, 1990 from 0230-0300 EST using 500w non-directional. The test will contain both Morse Code and Voice ID's. KRXY will be silent for the preceding 1/2 hour and will be conducting routine maintenance. Our thanks to Girard M. Westerberg Chief Engineer. Arranged by the Colorado CPC Machine for the National Radio Club.

**KORN-1490**, 319 North Main, Mitchell SD 57301 will conduct a Special DX Test on Friday Morning November 16th from 0500 to 0530 EST. Test details will follow. Our thanks to Mr. Joseph

(Continued on page two)

### DX Time Machine From the Pages of DX News

50 years ago ... from the Oct. 26, 1940 *DXN*: TPs being heard by Joe Brauner, Williamsville, NY, included 4QS and 4BH on Oct. 21, and heard by Steve Mann, Lakewood, OH, were 2YA, 4QN, 2NR, 3YA, 2BL, 4QS, 3LO, 4QG, 3GI, 4YA, 2YC, 2CY, and 1YA.

25 years ago ... from the Oct. 23, 1965 *DXN*: John Callarman, Pampa, TX, bagged KICY-850 at 4am 10-11, plus Alaskans on 730 and 660.

10 years ago ... from the Oct. 20, 1980 *DXN*: Heard by Joe Brauner, Punxsutawney, PA, was KCAD-1560 Abilene, TX on 9-22.

R. Shields for this test. Arranged by the Colorado CPC Machine for the National Radio Club.

**KLER-1300**, P.O. BOX 32, Orofino, ID 83544 will conduct a special DX Test on Saturday morning December 1, 1990 beginning at 0745 to 0800 EST. The test will consist of tones, voice and Morse code ID's. Our thanks to Mr. Jeff Jones, Station Manager. Arranged by Colorado CPC Machine for the National Radio Club.

**KOJM-610**, P.O. BOX 7000, Havre, MT 59501 will present a special DX test Monday Morning December 3, 1990 between 0200 and 0230 EST. This test will contain Morse Code ID's and other programming. Our thanks to Rob Yaw, Chief Engineer, for conducting this test. Arranged by the Colorado CPC Machine for the National Radio Club.

**KUMA-1290**, P.O. BOX 340, Pendleton OR 97801 will conduct a special DX Test on Sunday morning December 10, 1990 beginning at 0305 EST. This test will consist of a special public service announcement for the National Radio Club. There will be Morse Code ID's contained with in the announcement. This will air two or more times between 0305 and 0330. KUMA will be broadcasting NBC TalkNet at this time. Our thanks to Mr. Greg A. Smith General Manager. Arranged by Colorado CPC Machine for the National Radio Club.

**KTIL-1590**, P.O. BOX 40, Tillamook, OR 97141 will conduct a special DX TEST on Sunday Morning December 16, 1990 from 0300 to 0330 EST. Test will consist of Music and ID's. Our thanks to Mr. Van Moe President for this test. Arranged by the Colorado CPC Machine.

**From the editor** ... Jerry Starr has been on vacation, if you've been wondering where "AM Switch" has been. Jim Renfrew's postcard said, simply, "No reports received - so no IDXD. Hope to have something in next week!" And "Musings of the Members" is down from its usual length. Although short columns in October are normal,

they're not desirable ... so let's get the radios warmed up and pencils sharpened and report!

Don't forget Rick Dau's GTG in Iowa City on November 3. There's a better-than-50% chance that Topeka will be represented; if anyone wants a ride, contact me. We'd be leaving early Saturday morning.

*They joined ...* John Hart, San Francisco, CA; Tom Walsh, Bedford, MA; David R. Alpert, New York, NY; and Kurt W. Neunzig, Topeka, KS (and Todd and I are working on at least three more active DX'ers in our area, trying to persuade them to join the NRC. Why not join us in recruitment? Send me names and addresses and I'll be happy to send complimentary copies of DXN to potential members.)

Fred Vobbe sent some information (much appreciated, thanks) concerning text transmission via modem and telephone line as per my request in #1. I would still appreciate your input in this area. I've discovered that "Prodigy" is useless for downloading text, for example, as it is graphics- rather than text-based. If you've had experience with CompuServe or America On-Line or other easily-accessible bulletin boards, please write. I'm trying to find the cheapest, quickest, and best way for editors and others to send text to me for DXN.

*From the GM ...* Mike Knitter would like your help in gathering information on FM stations in your area for the upcoming 4th Edition FM Station Address book. Send updaters to the present book and in addition include format, network, a telephone number (studio or office) for each station in your area. If you don't have a book to follow, please also send antenna height, address, vertical and horizontal powers, call letters, frequency, and location, plus additional information such as construction permits, future expansions, etc. Compile and send it all by December 1, 1990 to NRC FM Updates - P. O. Box 24 - Cambridge, WI 53523-0024. Thanks.

## Domestic DX Digest - East

**William Hale**

734 Burleson  
San Marcos, TX 78666

DX Catches in the Eastern U. S. and Canada, with 24-hr. ELT

### MEDIUM WAVE RAMBLINGS

- Methinks the "season" is here as activity is picking up. Plenty of great catches are reported this week, many for the first time in DXD-E! Keep 'em comin', gang.
- **Perry Crabill** reports that when checking out his new Palomar loop, it doesn't work as well as his homemade two foot loop fed into the loop input of a ULF Engineering Model L-201 ULF Preamp. However, Perry reports, the Palomar is quite adequate in a number of situations, and is more convenient to use.
- A November 3rd Get-Together is being planned by **Rick Dau** in Iowa City, IA at the Best Western Canterbury Inn just off I-80 Exit #242 in Coralville (Iowa City suburb). The fun kicks off at 2 PM. Bring radios, log books, antennas, etc. Rick would love to see you there!!

**104 1/2**  
**Kamifm**

### SPECIAL

- 640 **WBXZ** MI ZEELAND - 10/1 on from approximately 1700-2300, off all day 10/2; this reflects their irregular schedule the past couple of weeks: on only 4-6 hours/day, 3-4 days/week, never on weekends; country-formatted when on; their phone has been disconnected (PLB-MI)
- 870 **WKZN** ME GORHAM - 9/24 0520-0530 on every day tried since late Sep. w/MoYL, numerous IDs & ads; barely audible the 1st time noted, but stronger daily thru the end of the month, in WWL null; this one makes Maine easy in the Midwest (it was second only to Alaska in difficulty for many years); try for this one again the last part of Oct, Nov & Dec, and the 1st half of months beginning in Jan around Gorham LSR (RK-IL)
- WKZN ME GORHAM - 9/26 0617 XLNT over WWL with MoYL and female DJ; "...congratulations from all of us at WKZN and Arista Records..." went out to a Portland man who had won a cassette of Cole Porter mx - the "WKZN Morning Sports Scene" with Howard Feldman; this one may be a best bet for Maine at Gorham LSR (REH-ON)
- 1060 **KFIT** TX LOCKHART-AUSTIN - has been silent since at least 10/1 pending sale of station and change (back to) to GOS format [Ed.-TX]
- 1080 **WEFP** PA PITTSBURGH - made the switch from The Oldies Channel to Business Radio Network on Labor Day; PD Ron Antill tipped us off two days before it happened (RD-IA)
- 1200 **WOPA** IL CHICAGO - calls are still WOPA; they apparently never used WXET; still R. Exitos IDs, though (RK-IL)
- 1230 **KWSN** SD SIOUX FALLS - 9/28 with new calls (ex:KKFN) and new format emphasizing Weather, Sports and News; CBS Network, Rush Limbaugh afternoons & Larry King evenings (WCM-SD)
- 1330 **WJTA** IL EVANSTON - ex:WSSY; also...NRC Log is wrong, per sign-on and sign-off announcements, night power is 51 watts (RK-IL)
- 1360 **WKMI** MI KALAMAZOO - 10/2 2301 ID given as "FM 103 WKFR and WKMI Kalamazoo"; they are not WKFR as reported in Vol 57 Issue 29; (WKFR(FM)'s legal ID was given at a different time:22S4); WKMI programs separately during the day (PLB-MI)
- 1410 **WGRO** MI GRAND RAPIDS - 9/28 noted back at full day power (1kw), after at least 2 months of operating at 100 watts or less (PLB-MI)
- 1540 **KSGB** TX FT. WORTH - 9/31 2300 with full-info sign-off; address given was:Box 339, Dallas std address in Log (MH-NE)

### UNIDS AND UNID HELP

- 600 **UNID** ?? - 9/22 0644 poor with a radio want-ads sort of thing; one of the phone numbers used an 837 exchange; slogan: "Serving three great southern states, this is AM-500" which would seem to indicate either WREC-IN or WCUP-NC; anyone know which one uses this slogan? (REH-ON)
- 610 **C** ?? - 9/24 0410 under WTUN/WIP/WDAF with FF talk || CKAC-730; CFLO or CHNC? (REH-ON)
- 690 **UNID** ?? - 9/30 2043 w/mentions of "Green Bay" during quiz show w/HS contestants; suddenly gone @ 2047; WLKE? (RF-OK)



**Pittsburgh '90**

Genuine souvenirs  
of the '90 convention: a yellow 1x2.5  
foot pennant plus a plastic white print on black folder,  
with a pad of ruled 8.5 x 11 inch paper: US \$10; \$11 to Canada;  
others: write. Order from NRC Publications.  
Hurry - get yours before they're gone!

**BBD** **UNID** ?? - 9/30 2020 with non-stop early-Beatles mx on eve with exceptional deep west conditions; present after WMEQ-WL cut back at 2015 (HJK-PA) [Wow, if that was KIXI-WA that would be one heckuva catch! - Ed.]  
**920 UNID** ?? - 10/1 2120 with "92 Country" slogans, pets lost and found named, mention of "Olympia" (MH-NE) [Why not KQEJ Olympia, WA? Got your new LOG yet? - Ed.]  
**1030 UNID** ?? - 9/30 2020 with Z-Rock program; heard most nights (CMH-NE) [Isn't KBZ-RD Z-Rock? - Ed.]  
**1040 UNID** ?? - 9/30 0818 with Business Radio Network; not WWD (MH-NE) [The Log sez KC8R-CO is 812 - Ed.]  
**1160 UNID** ?? - 9/23 0617 weak under KSL with "Judy in Disguise, With Glasses", suggesting and OLD format; maybe WCCS? (RD-IA)  
**1180 UNID** ?? - 9/15 2203 weak under KKAR with Johnny Horton's "Battle of New Orleans"; methinks OLD, but log sez nobody with that format would be on this late (RD-IA)  
**1350 UNID** ?? - 9/23 2139 with Texas A&M FB (MH-NE) [Definitely NOT KCOR-TX, don't know if either KCAR or KTXJ are on Aggie network. Since A&M was playing LSU that night, how about WSMB-LA? -Ed.]

#### DX AND EQUIPMENT TESTS



**1410 WQUB** FL LEESBURG - test not heard (RK-IL)  
**WQUB** FL LEESBURG - 9/16 ...not heard (RCW-MI)  
**1480 WSOS** MI YPSILANTI - 9/13 0500 good with UC and ID on ET (RK-IL)  
**1510 WAHT** PA ANNVILLE - 9/18 0023-0026 good with TIs and announcement: "This is WAHT, operating on a frequency check" (RD-IA)  
**1540 WSMI** IL LITCHFIELD - 9/26 0102 over/under KXEL with FC announcement; "WSMI, Litchfield, now signing on for frequency testing"; TIs started about 10 seconds later (RD-IA)

#### TIS AND OTHER STUFF

**530 TIS** IN LAKE COUNTY (probably Gary or Hammond) - 9/23 0351 poor in TIS mess with Lake County Visitor's Bureau info; this frequency now sounds like a GYer here...there are 6 TISs within 50 miles of my QTH (RK-IL) [Roger Winsor sez it's in Hammond, see Issue # 1 - Ed.]

#### MIDNIGHT TO 0800 HOURS ELT

**550 CHNO** ON SUDBURY - 9/29 0045 fair in mess w/"This is the Nation's Superstation, the Music Radio Network, N-O-S-S"; 0100 Canadian nx; new (RF-ON)  
**580 KUBC** CO MONROE - 9/14 0705 fair with detailed ID and wx (67°) (RD-IA)  
**610 KSKE** CO VAIL - 9/14 0700 Fair under WDAF with Chicago's "Make Me Smile" ~ local ads and "K-Ski" ID; this opening to Colorado DID make me smile (RD-IA)  
**690 KUNA** AZ FLAGSTAFF - 9/23 0800 good with satellite OLD T ID: "The Voice of Northern Arizona, KVNA, Flagstaff"; LOGGING #1000!!! ..at last! (RD-IA)  
**KRMX** CO PUEBLO - 9/23 0801 Fair with "Kah-Errey-Emmay-Equis" ID and mention of Pueblo; the last time I heard this guy it was KAPI over 6 years ago (RD-IA)  
**730 WCPT** VA ALEXANDRIA - 9/15 0636 fair ~ poor in mess with ID (RK-IL)  
**640 WWLS** OK MOORE - 9/24 0421 fair with "Sports Final Trivia from Star Communications in Boston over the American Radio Networks"; loud trip tone keyed ID by female; "Sports Radio is 640-AM WWLS Moore-Norman-Oklahoma City"; then gave ID for a second AM station but lost under CFCO-630 splash (REH-ON) [Other 'Twas KXID Wagoner, OK...see 1530 in 1600-2400 ELT section last Issue - Ed.]  
**910 KLCN** AR BLYTHEVILLE - 9/27 0700 fair with brief sign-on: "This is Arkansas'...AM 910, KLCN, Blytheville" (RD-IA)  
**540 WIDG** MI ST IGNACE - 9/26 0656-0715 with C&W mx, IDs as "KC103", ABC Nx, and ABC Sports with Johnny Holliday; IDd as "St Ignace-Petosky-Cheboygan"; poor signal, mixing with CBM (RCW-MI)  
**960 WHYL** PA CARLISLE - 9/23 0653 fair with ID, MoYL off the bird (RD-IA)  
**990 CHTX** PQ MONTREAL - 9/22 0312 briefly over WRMM with CHR and non-ID "Montreal's 990 Hits, hit after hit after hit..."; then mention of "12 in a row"; poor with WWCN nulled; ex:980 (REH-ON)  
**CHTX** PQ MONTREAL - 9/28 0550 with IDs as "Montreal's 990 Hits", mentions of playing 10 songs in a row, CHR mx, and ad for D&M Restaurant; very good signal until CBW sign-on @ 0557 (RCW-MI)  
**1030 WNIL** MI INDIAN HEAD - 9/23 0649 with sign-on: This is Washington's Super Sound on WNIL, Indian Head"; DC on at 0646 flattened WBZ and WUFL; #2 from MD (RD-IA)

**WUFL** MI STERLING HEIGHTS - 9/22 0630 fair with sign-on; uses U.S. and Canadian National Anthems at sign-off (RK-IL)  
**WUFL** MI STERLING HEIGHTS - 9/23 0645 fair with promo for a Sunday afternoon show "on Family Life Radio, WUFL" (RD-IA)  
**WNOW** NE MINT HILL - 9/19 0655 atop briefly with ID; NC #4 (RD-IA)  
**SC GREENVILLE** - 9/30 0120 with local ads, IDs; SC #3 (MH-NE)  
**DN SARNIA** - 9/17 0215 fair ~ good with Star Country, ads and ID (RK-IL)  
**1140 WKWM** MI KENWOOD - 9/30 0740 w/local ads, mentions of Grand Rapids (MH-NE)  
**1180 WMIX** KY FLORENCE - 9/29 0653 with ads for Fountain Square Chiropractic Clinic and Shapley Outlet Mall; IDd as "AM 1180, WMIX, Florence, Cincinnati's memory maker"; MoYL-type mx, nx on the hour, and promo for the 1180 Club, a variety show produced by the station; good signal, mixing with WKAQ (RCW-MI)  
**1220 KGIR** MO CAPE GIRARDEAU - 9/24 0305 with satellite NOS using same feed as WWDK-1280 (Unistar, I believe); after Connie Francis song had an "AM-1220 KGIR" call ID drop-in; then ~ "Too Young" by Nat King Cole; roughed up by WKNR/CKCW/CKSM (REH-ON)  
**WKNR** OH CLEVELAND - 9/2 0323-0402 with C&W mx and ads. "Classic Country AM 1220 WKNR Cleveland"; good with QRN about nil; CKBW sometimes atop after 0500 (HH-MD2)  
**1230 WIGS** NY GOVERNEUR - 9/30 0100 up out of mess w/fair signal, ending wx report for "95-X", then ID by female: "(5-X is 95.3 WGIX and 1230 WIGS, Gouverneur" then ~ ROK mx (HJK-PA)  
**1430 KCOH** TX HOUSTON - 9/21 0038 strong with UC mx "on the new 1430, KCOH"; Houston #6, overall #995 (RD-IA)  
**KLO** UT OGDEN - 9/21 0006 fair with promo for Wildcat FB + ID; only my 2nd regional logging from Utah (RD-IA)  
**1480 WZRC** NY NEW YORK 10/1 0017 briefly atop w/ad for upcoming program, plenty of "Z-Rock" & WZRC IDs; new (RF-ON)  
**KSDR** SD WATERFORD - 9/23 0816 Fair with ad for carpet store ~ ID and "Woolly Bully" (RD-IA)  
**1490 WLPA** PA LANCASTER - 9/25 0035-0100 w/network talk show, promo for show on WLPA Monday thru Friday at 6:30; poor, under and over unit with mx (DI-ON)  
**WEISL** IL EAST ST LOUIS - 9/25 0054 fair with tail-end of ID: "...is WEISL, East St Louis, Illinois" (RD-IA)  
**1510 WKXU** MA BOSTON - 9/20 0630 Fair with C&W mx and ID (RK-IL)  
**1520 WWKB** NY BUFFALO - 10/2 0100 fair with ID: "Business Radio 1520, WWKB, Buffalo" - BRN Nx; KOMA running QC! (RD-IA)  
**WDRA** OH TOLEDO - 9/20 0645 Fair with ID while checking my tape (recorded by timer) for sign-ons (RK-IL) [It doesn't count if you were sleeping at the time of reception, hi - Ed.]  
**1550 WTZR** IN SODDY-DAISY - 9/23 0255 good with OLD + "Tiger Radio" IDs; no ads or anything else noted (RK-IL)

#### 0800 TO 1600 HOURS ELT

**990 KSUP** NM ARTESIA - 9/26 0806 w/MBS Nx, local wx, IDs; ad for US Department of Agriculture; NM #13 (MH-NE)  
**1210 WOGL** PA PHILADELPHIA - 9/2 1313-1348 good daytime reception with Phillies BB warm-up pgm and into the game; plenty of ads; "Oldies 1210 WOGL" slogan; apparently the FM does not carry BB (HH-MD1)  
**1250 KIKC** MT FORSYTH - 9/25 0802 w/MBS Nx ~ local ads and local nx; IC @ 0807; ad for Dedmon's Coast-to-Coast ~ Willie Nelson mx (MH-NE)  
**1400 WXBX** NY BUFFALO - 9/27 0801 briefly on top with legal ID complete with rapid fire laser blasts: "This is WXBX, Buffalo. Radio WXBX"; so much competition from WQBH/CKCB/WLKK/WMAN/WBAI that I couldn't be sure of their format but believe it was either CHR or AOR; ex:W5KT (REH-ON)  
**1430 WBEU** WI BEAVER DAM - 9/22 0825 with a community bulletin board-type thing mentioning Beaver Dam, Fox Lake, Randolph and the Dodge County Historical Museum; had CL, temp and TC then faded but reappeared @ 0830 with local nxcast; poor with WFOB nulled; #50 on 1430 (REH-ON)

#### 1600 TO 2400 HOURS ELT

**610 WIP** PA PHILADELPHIA - 9/27 2100 fair, using Palomar Loop to null co-channel 500 watt local WUSQ-AM (PC-VA)  
**730 KWRE** MO WARRENTON - 9/29 2006 SNN Nx, ID: "What's the best way to reach your customers? You're listening to it, KWRE" (MH-NE)  
**790 CISM** ON SUDBURY - 9/28 2026 good with ad, ID, Blue Jay BB (RK-IL)  
**840 CHUR** ON NORTH BAY - 9/29 1922 w/fair signal, WHAS looped; local wx, then ~ "Open House Party" (HJK-PA)

650 WJAC PA JOHNSTOWN - 9/19 2114 good with OLD, ad, wx (RK-IL)  
 860 KONO TX SAN ANTONIO - 9/26 2113 ID; "San Antonio's first and only oldies station, KONO" (MH-NE) [That's their slogan, but it's not a true statement - Ed.]  
 870 KPRM MN PARK RAPIDS - 9/30 2000 very good in WWL null with NBC Nx; 2006 KPRM contest promo, Park Rapids wx, ID; 2007 + TalkNet; new (RF-OH)  
 WFLO VA FARMVILLE - 9/28 1930 Fair with sign-off... "dedicated to community service"; no SSB (KJH-PA)  
 880 KGHT AR SHERIDAN - 9/30 1953 weak to fair signal; atop a looped WCBS at times; "This is your radio station, BBO KGHT"; had C&W mx (KJH-PA)  
 WMEQ WI MENDONINEE - 9/19 1959 Fair with TalkNet, ID, NBC Nx, ads (RK-IL)  
 WMEQ WI MENDONINEE - 9/30 2005 Fair + good signal ending NBC Nx, then + wx report... "Your Color Radio Station, WMEQ" then JX which led to TalkNet; mixing with WCBS/KGHT/some UNID (See UNIDs), a real mess (KJH-PA)  
 CKLO MB BRANDON - 9/27 2058-2103 with Old Time Favorites pgm hosted by female; Canadian opening brings best signal ever heard from them, and 1st report of new season (WCS-SD)  
 900 WSEA DE GEORGETOWN - 9/30 1935 Fair, atop in CHM1 null w/"Solid Gold WSEA" ID; 1938 wx for DelMarVa Peninsula, "Oldies Radio WSEA 500" ID; new (RF-OH)  
 WKDV VA STAUNTON - 9/30 1931 briefly surfaced w/ID; new (RF-OH)  
 940 KIX2 TX AMARILLO - 8/29 2038 ads for Alka Seltzer, K-Mart, Sears; wx and "94 Kix" slogans (MH-NE)  
 CBM PQ MONTREAL - 9/11 Midnight fair with brief mention of "CBC News" before K104 ID; 1st time at this QTH (RD-IA)  
 970 WAUB KY LOUISVILLE - 9/27 2336-2400 with ads for U of K Football b'casts, Crimestoppers; IDs as "Wave 970" and "Original Hits"; top o' the hour ID and network nx (RCU-MI)  
 WANU VA WAYNESBORO - 9/28 1230 with ad: "No reasonable offer will be refused at Barber Chevrolet-Buick-Gmc, Waynesboro"; station is still on the air despite being dropped from the 970 list of the 1991 edition of the AM RADIO LOG but is listed in location and call-letter cross-references; good signal (PC-VA) [Perry, Perry, Perry...this guy is in your own state of Virginia, not PA as you reported. You had me goin' for a couple of minutes! Look for WANU on Page 97 of new Log - Ed.]  
 WHA WI MADISON - 9/29 2000 with Wisconsin wx and ID + nx (MH-NE)

1000 KXRK SD SIOUX FALLS - 9/30 1941 ID: "Country One-Thousand's \$1000 giveaway" (MH-NE)  
 1020 WPEQ IL PEORIA - 9/28 2015 with full-info sign-off, no SSB (MH-NE)  
 1050 KFIL MN PRESTON - 9/30 2015 C&W mx, full-info sign-off with no SSB; MN #42 (MH-NE)  
 1070 CJRP PQ QUEBEC - 9/29 1814-1830 w/mx, sung in FF, ann FF SID "CJRP"; poor (DT-ON)  
 1120 KFAB NE OMAHA - 9/30 TalkNet, promo for old-time radio (Maltese Falcon) "at 9:05 tonight on KFAB"; ad for Best Western Motel in Fremont, NE, KFAB wx; over/under WBT (DT-ON)  
 1130 WKEQ KY FRANKFORT - 9/25 1954 with ID, C&W mx; weak (MH-NE)  
 WDGY MN MINNEAPOLIS - 9/30 2033 over KWKK with Vikings postgame show and local ads (MH-NE)  
 1140 KNAB CO BURLINGTON - 9/26 2100 w/AOR; sign-off w/no SSB (MH-NE)  
 1150 WAWY WI CHIPPEWA FALLS - 9/23 2011 XLNT with non-bird OLD and call-ID; "The Chippewa Valley's original oldies station, WAWY" - ad cluster for Ford-Mercury Lifetime Service Guarantee, Progresso Soup, Financial News Cable and station promo for news feature "The Hidden Homeless on Way Radio" (REH-ON)  
 1160 WJJD IL CHICAGO - 9/30 2141-2214 OLD "AM 1160 WJJD", sports scores, "Great songs, great memories 1160 WJJD"; Fair, no WCCS (DT-ON)  
 WAMB TN DODENSON - 10/1 2035 ID, Wax Works Show (MH-NE)  
 1190 CFSL SK WEYBURN - 9/31 2101 ID + Broadcast News; under KVUS's sign-off (MH-NE)  
 1200 WAGE VA LEESBURG - 10/1 2045 good atop w/ID; 2049 ad for Southern States Petroleum - Cincinnati vs Seattle FB game; new (RF-OH)  
 1240 KASL NY NEWCASTLE - 9/27 2000 strong for a few minutes with ID and nx; new (MH-NE)  
 1250 KOFC AR FAYETTEVILLE - 9/27 1955 in briefly with ID; new (MH-NE)  
 1260 WEZE MA BOSTON - 9/27 2259 very strong with ID, then + Family Radio programming (KJH-PA)  
 1280 WKLB KY MANCHESTER - 9/23 1956 good with drawing for the Kentucky Lottery; many mentions of "the Kentucky Network" (RD-NE1)  
 KWMB WY LARAMIE - 9/23 2059 Fair with promo for the Junior Joe Boosters + ID; "The station with a heart, AM 1280, KWMB, Laramie" (RD-NE2)

1310 WTLB NY UTICA - 9/30 1911 ID at this time plugged into satellite ROK Format (KJH-PA)  
 1350 CKAR ON OSHAWA - 10/1 2049 with BlueJays BB, ad for Budget Rent-a-Car; ON #20 (MH-NE)  
 1360 WEBB MD BALTIMORE - 9/20 2303 UC mx, duo man & woman singing (soul) 23:30 "...WEBB..."; poor under WEBB (DT-ON)  
 1380 KMUS OK MUSKOGEE - 9/25 2000 with AOR and OLD; 1st time hrd with these CLS (MH-NE)  
 1400 KGBX MO SPRINGFIELD - 9/20 2327 Fair with song "Promises, Promises" ID: "105.9 KGBX is in touch with the Ozarks" (RD-IA)  
 1420 WLIS CT OLD SAYBROOK - 9/23 2230-2245 OLD ROK, "1420 WLIS", WLIS Bulletin Board, "write to WLIS, Box W, Old Saybrook", WLIS Fishing Report; over/under WACK (DT-ON)  
 WACK NY NEWARK - 9/24 1815-1955 Yankees pregame show, local sports, ???(Ed.) WCED (DT-ON)  
 WCED PA DU BOIS - 9/24 1925-2000 OLD, female announcer, wx "That's the Forecast from WCED" and at 2200 "Latest nx, sports, & weather on WCED, DuBois"; medium poor, WACK "gone" (DT-ON)  
 1430 WUAM PA ALTOONA - 9/26 2134-2200 w/Pittsburgh vs Chicago BB; 2200 "WUAM, Altoona" and SID; under CJCL with BlueJays BB (2 for 1) (DT-ON)  
 1450 KCLO MN ST CLOUD - 9/26 2348-2350 break thru with ad for "...grocery, pizza, 114 --- Street, Santiago area" (sounded like "San Diego") but trusty atlas shows a Santiago near St Cloud; disappeared under an unID with Larry King, etc (DT-ON)  
 WJXN MS JACKSON - 9/29 2359 distinct "WJX" heard, but not the "N"; MS #9 (MH-NE)  
 1460 WACO TX WACO - 9/28 2145 with Baylor vs Texas Tech FB; new (MH-NE)  
 1510 KGA WA SPOKANE - 9/24 2200 weak under WLAC with C&W song + ID: "We are a Price Broadcasting station, 50 thousand watt 1510 KGA, Spokane-Coeur d'Alene" and 7:00 IC (RD-IA)  
 1530 KMAN MO BUTLER - 9/25 2300 with KC Royals BB, local ads (MH-NE)  
 1550 KUKI LA SHREVEPORT - 9/25 2051 ID: "96 point 5 KUKI with 40 minutes of rock" (MH-NE)  
 1590 KIDZ MO INDEPENDENCE - 9/18 2030:30 Fair with sign-off (RK-IL)  
 1600 WMCR NY ONEIDA - 9/28 1756-1830 mx, mention of FM station, ad for Home Center, Rte 5, featuring Armstrong linoleum; poor (DT-ON)  
 WAYC PA BEDFORD - 9/18 1858-1905 ads and I think they had nx @ 1900; heavy QRM from WKEN-DE and other unIDs; got ID = 1900 (HH-MD2)

#### REPORTERS

WCM-SD REH-ON WILLIAM C. MOSER//Lake Preston, SD/Zenith K731 + loop  
 CHARLES REH//Leamington, ON//R-350A + Sanserino Loop + IR-3000 open reel tape deck  
 PC-VA RK-IL PERRY CRABILL//Winchester, VA//R-5000 + no-Pal-o-mine Loop  
 ROBERT KRAMER//Chicago, IL//R-71A, R-1000, HQ-129X + 2 RW Loops, Kowalski Loop + Kantronics Signal Enforcer peak/notch filter  
 HJH-PA RCU-MI HARRY HAYES//Wilkes-Barre, PA//Superadio + Superloop, SM-2  
 MH-NE BOB WALKER//Wixom, MI//ICF-2010, ICF-2003 + Radio West Loop  
 HH-MD MIKE HAWK//Omaha, NE//R-1000 + 2' coax loop  
 HANK HOLBROOK//Dunkirk, MD//(1) SP-600 + 50' LW (2)SP-600 + Colegrove Loop  
 RF-OH RICHARD FRCHO//Willoughby, OH//R7A, NRD-S15, SM-1, LW  
 DT-ON DON TRELFORD//Scarborough, ON//  
 PLB-MI MR. PHIL BOERSMA//Spring Lake, MI//  
 RD-IA RICK DAL//OAKLAND, IA//R-1000 + RW Loop//1006 heard  
 RD-NE RICK DAL//(1)on I-80 near Kearney, NE, (2)Lexington, NE//Ford Caradio

#### SOME ABBREVIATIONS AND SPECIAL SYMBOLS USED IN DDXO-E

||:parallel with or to ->to or into :00:on the hour AC:adult contemporary AP:Associated Press BBB:big band BRN:Business Radio Net CMW:country & western CHR:contemporary hit radio CID:code ID ContChr:contemporary Christian EZL:easy listening EE:English FF:French GOS:gospel IRN:Interstate Radio Net J:jiingle LS:local sunrise LS:local sunset M:Music Nxnews NPN:National Public Radio Octopen carrier PDL:political PSRA:pre-sunrise authority PSA:post-sunset authority QM:interference QH:location REL:religious ROK:rock 'n' roll RS:regular schedule S:stereo SID:singing ID SRS:sunrise skip SG:Spanish SSB:Star Spangled Banner SSS:sunset skip TC:time check TT:test tones UC:urban contemporary UPI:United Press International W:weather

#### GYDXA UPDATE

1230: KOTIS NM DEMING Mike Hawk Omaha, NE 801  
 1240: WJQD MS MARION Mike Hawk Omaha, NE 732  
 1400: KODY WY CODY Mike Hawk Omaha, NE 700



# Domestic DX Digest - West

**DX Catches in the Western U. S. and Canada, with 24-hr. ELT**

## Wayne Heinen

4131 S. Andes Way  
Aurora, CO 80013  
FIDO NET 104/108  
(303) 699-6335 (prepaid only)

Welcome to new contributor Chuck Dixon Hope to see you here often. Thanks to "CPC Machinemate" Jeff Tynan for typing up his contributions (complete with comments!) while I was at work. Contributors please keep it mind that it's so that NO item (unless it's in the "Special" category) is more than 30 days older than the masthead date!

### Midnight to Midday

540 CBK SK Watrous  
10/2 0300 CLA Mx & CBC Nx, ID "This is Radio 540 Saskatchewan" s/off 0308 w/ments of Watrous xmtr site. Very good. (CD-CA)  
590 KSSK HI Honolulu  
9/24 Noted off 0620-0700 Back on by 1240. Too Much QRM to DX (TH-CA)  
650 KYAK AK Anchorage  
10/3 0135 Frequent ID's inc "Alaska's Number One Station" Promos for something called "Naughty Bunnies '90". Good (CD-CA)  
700 CKRD AB Red Deer  
10/2 0245 CLA Mx, Ad for Player's Club" Fair to Good (CD-CA)  
720 KUAI HI 'E'e'e'e  
9/16 0845 Noted testing with intermittent OC. Off by 0900, Noted back by 1102, Noted following SM w/1159 s/on (DP-HI)  
830 KIKI HI Honolulu  
10/2 0215 Slogan "Hawaii's Oldest Channel" and others First HI this season. Poor (CD-CA)  
840 KVEG NV Las Vegas  
10/4 0230 Dominate w/lcl Sx tlk show 0250 lcl spots/PSA's 0300 ID "Las Vegas Calling KVEG North Las Vegas" NV #13. (0W-CO)  
880 WCBS NY New York  
10/1 0425 Poor under CKLQ and KJJR. "WCBS news time, 4:25." NY #5 (JT-CO)  
880 KJRR MT Whitefish  
10/1 0431 Fair to good on peaks "Home of continuous country, KJRR." MT #14 (JT-CO)  
960 KNDN NM Farmington  
10/10925 Navaho chanting 0930 "KNDN" & more Navaho Chanting Good w/KYGO slop (WH-CO)  
1010 CBR AB Calgary  
10/20140 CLA Mx followed by NX fair o/u SS Pest KIQI (CD-CA)  
1140 KCMJ CA Palm Springs  
10/8 0711 "Nobody plays more Country favorites than KCMJ" and C&W. 1st time for this one (WH-CO)  
1140 WAKKT MS McComb  
10/8 0715 Faded in w/Mississippi Net Ag report to 0721 & C&W Mx. No ID thru 0733, tent rpt on its way. (WH-CO)  
1210 KUBR TX San Juan  
9/29 0001 Poor thru KGYN SS ID by man "Radio Cristiana KJAB(?) 104.9 FM.. KUBR 1210 AM, San Juan Texas...KMRN 104.9 FM..." SS REL TX #109 (0W-CO)

1230 KTRF MN Thief River Falls  
9/28 0300 ID followed by CBS Nx; 0305 spot Christian Science Monitor; 0306 Wx & Sx by female ann...sounded like lcl tlk show thru 0320. MN #19 (0W-CO)  
1240 KWIK ID Pocatello  
9/28 0235 Call ID in QRM then faded out Logging # 1001 (0W-CO)  
1310 KDLS IA Perry  
10/1 0718 Good signal mixing w/WIBA w/lcl promo's KFKA nulled (WH-CO)  
1340 KKLY WY Worland  
10/1 0217 Fair w/CWM and ad for Games-R-U's in Thermopolis. Tent. pending reception report verification (JT-CO)  
1340 KSGR ID Nampa  
10/1 0227 Excellent on peaks with "Idaho's favorite oldies, AM 1340, KSGR." (This morning's haul on 1340 was made possible by KDEN's regular MM SP) ID #8 (JT-CO)  
1340 KCAP MT Helena  
10/1 0229 Fair with KCAP evening news MT #13 (JT-CO)  
1340 KIKO AZ Miami  
10/1 0312 Poor signal. "... in Miami, KIKO" (perhaps this is as close as I'll get to logging a FL station) AZ #51 (JT-CO)  
1360 KNGN NE McCook  
10/1 0800 Noted with s/on "Your Good News Station" and "Listener Supported" REL format for this call change (ex-KICX). (WH-CO)  
1450 KBFS SD Belle Fourche  
9/27 0225 Id only barely through QRM Logging #1000! "... Your 24 hour... station KBFS Belle Fourche" and OLD format (0W-CO) (Congrats!-ed)

Midday to Midnight  
610 KSKE CO Vail  
10/8 1620-1645 Continuous C&W Mx "610 AM Ski Country Vail Colorado" and more C&W..no longer ROK format (WH-CO)  
840 KVEG NV North Las Vegas  
10/2 2300 Good signal mixed with WHAS BRN format; then "This is Las Vegas calling" and legal ID on the hour. This catch was particularly satisfying since the tower for KOA 850 is only 2 miles from my house NV #15 (JT-CO)  
1280 KHEP AZ Phoenix  
10/4 2059 "Send your... to KHEP" briefly u/KXKL AZ #52. (JT-CO)  
1610 KAF277 CO Mesa Verde Nat'l Park  
10/4 2325 Ments of National Park, Pre-historic artifacts, something "located 21 miles into the park" Partial ID "K..727" (JT-CO)

Unif'd's  
1530 UNID  
9/24 0625 Noted w/American Accented prgm u/

KFBK/2YP; maybe WCKY? (Hard to say Dale w/o any details of the prgm-ed) (DP-HI)

1610 UNID

10/4 2323 "Rain or Shine this station operates 24 hrs a day." Wx from Austin Weather Service. (JT-CO). Ditto on this one 10/8 0525 (WH-CO)

### CONTRIBUTORS:

(CD-CA) Chuck Dixon Trinidad, CA - HQ-180A w/ 1' Air core Loop

(DP-HI) Dale Park Honolulu, HI - ATS-803A w/ Selec-A-Tenna  
(JT-CO) Jeff Tynan Parker, CO - Sony 2002 w/ 4' 2401si Loop  
(WH-CO) Wayne Heinen Aurora, CO - RW-TRF-655, R-390A w/ 4' loop.  
(0W-CO) John Wilkins Wheat Crisps - R-1000 w/ 2.5' loop.



## The Stevenson Log ... by Gene Martin

Wave	Length	Station	88
341	KSAC, WKAQ, WMCA,	KFAB	
345	WLS, WCBD		
349	KOB, KWSC, WEEL		
353	WJAD, WWJ		85
357	CFCA, CHIC, CHNC, CJDC, CJSC, CKCL, CKNC, CNRT		
361	KGO, WHN		83
366	WHB, WDAF		
370	WEBH, WJJD		
375	KTHS, KVVO		80
380	WGY, WHAZ		
384	KJR, WMBF, CNRW		78
389	WTAM, WEAR		
395	WFI, WLIT, WOAI		
400	WHAS, WHT		75
405	KHJ, WJY, WOR		
411	CFCF, CFYC, CHYC, CKAC, CKCD, CNRM		72
416	WCCO		
422	WLW, WKRC		
428	WSB, KPO		70
435	NAA, CFAC, CFBN, CNRC, CNRO		
441	KLDS, WOS, WDWF, WLSI, CJKC		68
448	WQJ, WMAQ		
454	KTW, WJZ		66
455	KFOA		
461	WCAE		
469	WCAF, WRC, KFI		64
476	WFAA, WBAP, WTIC		
484	WOC, WSUI		62
492	KGW, WEAF		
500	WMC, KFRU		60
508	WIP, WOO, KLX		
517	WCX, WJR, CJCA, CNRE		58
526	WNYC, WHO, WOAW		56
535	KYW, WHA		
545	KSD, KFUO		55

## The Answer Man

Got a question about radio? Send it to Russ Edmunds - 753 Valley Rd. - Blue Bell, PA 19422-2052. No question is a dumb question, and Russ will answer all, from basic to highly technical. Watch for the answer in DX News!

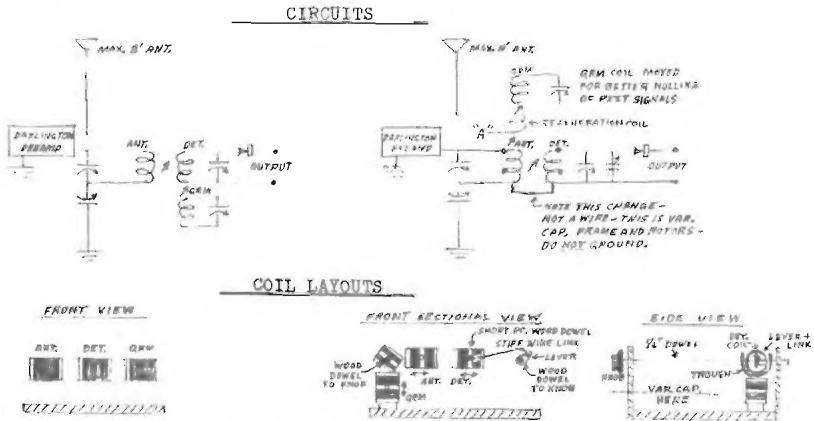
Today's DX'ers will find many familiar calls in this section of the band, at strange places on the dial, but they should also note that two stations, WMAQ and KFI, are still broadcasting on the same wavelengths that they used in 1926. And all through the years, 550 has had a St. Louis station on it.

To help today's DX'ers orient themselves, I have inserted the kilohertz a few places in this table of wavelengths. The final zero is left off.

## The 'Half-Breed' Regen Crystal Set - by Raymond Cole

Obviously this is not a true crystal set, but it combines the selectivity and sensitivity of the Tugle Circuit crystal set with the power of a regenerative circuit for truly startling results. It was discovered quite by accident in search of a way to make a "One Knobber" (single dial) Tugle.

The Tugle Circuit with Darlington preamp (see "The Challenging Crystal Set") is this:  
the Half-Breed is this:



Three sections of a five section variable capacitor were used. All coils were originally mounted on  $\frac{1}{4}$ " dowel rod shafts, but this was abandoned except for the regeneration coil, which rotates to control the regeneration. However they should all be wound with the  $\frac{1}{4}$ " center space to maintain proper band coverage. Tapped at 13 turns from the "floating ground" end, an alligator clip moved to this tap from the "upper" end of the coil, then gives short wave coverage with WWV, 10 Mhz, about 7 degrees right of center of the dial. (I use a photocopy of a 6" protractor as a dial).

Either use a metal panel or cover the back of your panel with aluminum foil, and ground either, since hand capacity will drive a person crazy on a regenerative circuit of any kind (especially when listening to Radio Austria, 9.875 Mhz).

The antenna coil is normally set to just about clear the rotating regeneration coil, but leave it adjustable. Spacing between the antenna and detector coil is normally between  $\frac{1}{4}$ " and 1" and needs to be easily variable to suit, across both bands, to control selectivity on each individual D-X signal. The lever is made of a 1" piece of perforated pipe strap with alternate one-quarter and one-eighth inch holes. The larger hole is used for the dowel, and the lever is glued solidly to it.

I mounted my antenna and detector coils in a U-shaped semi-stiff plastic trough, but stiff paper would do just as well. The trough "hangs" on the two control knob dowel rods. A short piece of dowel through the detector coil has one loose turn of the stiff wire link around it, which slides the coil back and forth in the trough.

Due to the extremely high gain of the Darlington preamp, at "A" a 30 pf capacitor is used most of the time, but for added D-X I used an alligator clip to give the sensitivity, selectivity and regeneration controlling choice on both bands of 12, 30 and 68 pf and .001. The Darlington can easily overload the circuit on strong signals - especially on short wave.

Coils are wound on 1-11/16" diameter toilet paper tubes 1-7/16" long with 1/8" clear at each end and 1" space in the center, exactly 33 turns #26 on each half. The regeneration coil is similar except 13/16" long with 10 turns on each half. Don't forget the 13 turn taps if you want short wave.

The regeneration coil's added turns affect tuning of the antenna circuit slightly, so a small trimmer capacitor must be added in the detector circuit, and will be adjusted to about 50 pf - peak it on a mid dial weak signal.

The output resistance should be 5k minimum or selectivity will be affected adversely. Changing the resistance will make re-peaking necessary.

The Darlington preamp is per "The Challenging Crystal Set" with 2N2222's selected for performance as shown there.

If you use a Radio Shack Mini-Amp (Amp-Speaker, they now call it) for audio output, do not try to use the same battery to power both it and the Darlington, since that won't work due to feedback through the battery.

I have no idea of the D-X limits of this "Half-Breed", but with double tuned circuits and the Darlington it sure is a hot little bugger. I have built two. One for an experimenter who is going to drive 240 miles to get it rather than trust it to UPS. He has heard it perform over the phone, \$4.00 worth of calls. But, please - no requests to build any more. Time is too scarce for me.

## Radio Roundup ... by Pete Kemp

Tim Lennon on WERC in Binghamton, NY, was upset because another station employee's car was broken into and her purse stolen by a black man. Lennon then decided that he would refuse to put on air anyone who was black. When callers phone in he would ask them their race and then decide to put them on the air. The station manager obviously was not impressed by this childish act and told Lennon to apologize. He still may be suspended or fired.

NWGT in Westbrook, Maine has changed its calls to WLZ.

Veteran talkshow host Ron Hunter recently got the ax from WSMB after his wife committed suicide. He was chastised for letting his wife detail their marital problems on the air during his phone in show. This is a truly sad story. Hunter appeared a few days later on the CBS Morning News, explaining what had happened, clarifying a number of points which had been blown out of proportion in the media. He also appeared on the TV Tabloid A Current Affair.

The latest Big Apple "book" is out, showing the top AMers as, WINS, WOR, WCBS, WFAN, WABS, WNEW, WSKQ and WLIR.

Howard Stern's five show has been given the go ahead for a full 13 shows. It airs on WWOR-TV.

Barry Gray will be back at the mike on WOR shortly, only he'll be originating the show from the bedroom of his home. Will he recuperate from hip surgery.

WCNX-1150 in Middletown, Connecticut has switched format to carry the Sun Radio Network.

Steve Kane has been given his walking papers at WABC. The morning spot will be taken over by fellow staffers Kathleen Mahoney and Rodger Skibenes.

FCC has decided to enforce its indecency standards on a 24 hr/day. The FCC had been a little selective enforcing standards during the day and evening hours when children would likely be listening.

WCOL has joined the ranks of the du coppers now playing goldies fulltime.

...WABC-770 New York has picked of ABC Talkradio's Bob Aaronson's show in the 3-6 a.m. spot...National Public Radio recently celebrated its 25th anniversary...WCAU's Dominic Quinn is moving from overnight to mornings on the station. WCAU placed 16th in the latest book, quite a come down for the once mighty station... Interested in news of the ol' sod (Wales, Scotland, England and Ireland), then tune in Toledo radio's WCWA and catch John Connolly's News From Home Show. 10-11 a.m...WDOT-Burlington, VT has switched from country music to the goldies du wop...The FCC's latest Notice of Proposed Rulemaking for AMers contain some interesting points, mandatory stereo, limitations on simulcasting, and giving current am stations with interference problems the inside track when allocating frequencies in the new 1605 to 1705 KHz. band segment...The NAB Science and Technology Committee hopes to present the results of its experiments with Suppressed Skywave Antenna Systems in September at the Radio 90 Conference in Boston...A lot of info is being spread across the pages of professional broadcasting literature concerning the future of Digital Audio Broadcasting (DAB). One prognosticator even goes so far as to predict a new band to accommodate it...While on the subject of bands, many groups are getting prepared for the upcoming WARC (World Administrative Radio Conference) in 1992. The WARC is an international group that gets together at pre-determined times, under the auspices of the ITU (International Telecommunications Union), to allocate frequency spectrum. A very political organization, one that requires a lot of diplomacy to be successful. With all of the technological advances that have come about in the last ten years, this meeting (which can last for months) will surely have ramifications for all of us...So much for now.

# DIGITAL AUDIO BROADCASTING

Will it put an end to the distinction between AM and FM?

**Broadcaster**  
-via Brian Vernon

by Steven Crowley

Compact discs sound great. They offer the consumer the finest in recorded audio quality. They're great for radio stations, too, as they're less of a maintenance hassle than tapes or records. Yet, listening to the radio, that compact disc quality doesn't come across.

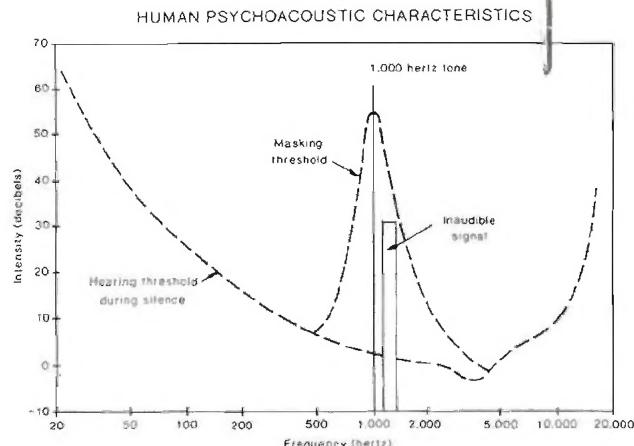
Such is the nature of AM and FM radio. They've served us well for decades, but can't match compact-disc digital quality due to inherent limitations in their analog transmission schemes. Neither AM or FM can match compact discs' frequency response of 20 - 20,000 hertz. AM is subject to electrical noise and interference from other stations, especially at night. FM is subject to multipath interference; this can occur in built-up urban areas where the receiver doesn't have a line-of-sight path to the transmitter. It then has to rely on the diffraction and reflections of multiple signals off buildings. Depending on how they add, they can cancel completely resulting in a momentary loss of service. This is most obvious in an automobile when pulling up to a stop light; your favorite FM station sometimes fizzles to nothing. Move a few feet forward, and it's OK; you've changed the geometry of the multipath problem.

In Europe, they've started from scratch and combined the latest in signal processing hardware with hearing psychology and developed a new type of radio — digital radio — that offers compact disc quality sound. The same technology might someday allow Canadian broadcasters to get their digital-quality audio to the listener.

Much depends on the results of tests taking place this summer under the auspices of the Canadian Advanced Broadcasting Systems Committee, a joint government/industry committee. Joining in the tests are the Canadian Broadcasting Corporation, the Canadian Association of Broadcasters, the Department of Communications and its Communications Research Centre.

The testing program will last through September and includes laboratory and field tests. Over-the-air tests and demonstrations will take place in Montreal, Ottawa, Toronto, and Vancouver. To generate the signal, a one-kilowatt transmitter will operate from 794.5 - 801.5 MHz (straddling TV channels 68 and 69) and feed a directional panel antenna.

Over-the-air digital audio transmission — sending accurate and noise-free audio in the form of digital data — has been tested before, but past schemes require several times the spectrum used by an FM station. It hasn't been practical for general use.



Source: European Broadcasting Union and the Eureka 147 Digital Audio Broadcasting Project

Two consortiums of European broadcasting agencies and consumer electronics companies — the European Broadcasting Union and the Eureka 147 Digital Audio Broadcasting Project — have spent four years and \$56 million (Canadian) to create a new, practical digital audio broadcasting system that eliminates the foibles of AM and FM. Commonly known as the Eureka system, it can deliver compact disc quality sound to the listener in a spectrum-efficient manner.

The Eureka system reduces spectrum requirements in part by reducing the amount of data needed to transmit audio. It does this by throwing much of the audio information away. It doesn't accurately reproduce the audio waveform; instead, it reproduces its sound by taking advantage of the masking properties of audio.

Masking is well known to psychologists who study human responses to sound, or psychoacoustics. While engineers measure frequency and intensity, psychologists are concerned with their perception as pitch and loudness. In masking, the closer two tones are in frequency, the greater the likelihood the louder tone will mask the softer tone. Increasing the frequency separation makes the softer tone more apparent.

The Eureka system uses masking to eliminate the details of audio that can't be heard. First, the audio at the radio studio is converted to digital data. Then, the data are analyzed to determine which loud

sounds are masking which softer sounds, based on a model of human psychoacoustic characteristics. The loud sounds are kept and the softer sounds that can't be heard are discarded as irrelevant information. Furthermore, the amount of data needed to represent the louder sounds is reduced; this increases noise in the audio, but enough data are always used to keep the noise below the threshold of perception.

To further reduce the amount of audio data, the data rate is varied according to the amount of activity in audio. Rock music requires more information than chamber music, which requires more information than an announcer. The transmission system is designed for the highest data rate required. During slow points in the audio, non-audio data can be transmitted increasing the utility of the receiver.

These additional data could be used to display information such as call letters, weather warnings, song titles, or station slogans. All these audio reduction techniques allow the amount of audio data to be reduced by more than 80 percent with no perceptible degradation.

This analysis and restructuring of audio in real-time takes a lot of computing power, but the increasing economies of digital signal processing (DSP) are making it practical for consumer use. DSP of the scope required by the Eureka system used to require prohibitively large computers. Today, the necessary DSP devices are avail-

able on integrated circuits.

Reducing the amount of data needed to represent audio helps lower spectrum requirements, but there's still the multipath problem. Even though a radio signal is carrying precise digital data instead of analog information, it can still interfere with itself at certain locations. The Eureka system solves multipath problems by taking advantage of the frequency-dependence of multipath: Since radio frequencies behave differently, multipath interference will usually occur on one frequency at a time.

With the Eureka system, the data are split up and portions transmitted on many closely-spaced frequencies. Because of the frequency dependence of multipath, only one frequency will be out of service at any one time. This means most of the frequencies, and hence most of the data, will be available.

Though a fraction of the data might not get through, this is overcome by using error correction techniques. Extra data representing error correction information are added to the audio data stream. These data tell the receiver what patterns of audio data should be being received at any instant. If the receiver detects an error, it then uses an algorithm to accurately predict what the missing or incorrect data should have been.

These error correction features enable the system to use much less power than conventional radio stations. Instead of brute force, the Eureka system uses the mathematics of error correction to finesse the audio data to the receiver. It's estimated that less than five percent of the power used by an FM station would be required for equivalent coverage. In recent tests, the city of Rennes, France (population 200,000) and the surrounding countryside were served with an on-the-air experimental system having a power of 11 watts.

The Eureka system is still under development so final specifications aren't known; many tradeoffs are being considered. For example, the better error correction schemes require more added data — that increased spectrum requirements.

It's hard to pin down final specifications because frequencies aren't now available. Ideally, technical specifications will be tailored to the unique characteristics of those frequencies. The developers are seeking frequencies for use in Europe, where it is planned to have audio transmitted by satellite. This would be augmented with ground-based transmitters to fill-in coverage gaps.

It's uncertain where the needed spec-

trum would come from for a digital audio broadcasting service in Canada. A mitigating factor is that the Eureka system is spectrum efficient. From one location, three separate stereo audio programs, or "stations", can be sent in the same amount of spectrum required by one FM station.

Since all stations can emanate from one location with equal quality, the system could be technical equalizer. Every station in a city could have equal-quality digital signals.

This summer's tests have several goals. It's hoped to determine basic parameters required for implementation, such as power requirements and interference criteria. The performance of the Eureka system will be evaluated in the presence of noise and interfering signals. Also tested will be its performance in shadow and multipath conditions.

Under consideration is a plan to implement the system pending successful test results and spectrum availability; it would be introduced sometime between 1995 and 2000. Priority for assigning DAB channels would be given to existing AM and FM stations. Any additional channels would be made available to other applicants. DAB would be primarily terrestrially based, but direct broadcast satellite service would be available for remote areas, and for national programming services to all areas.

The Eureka system would coexist with AM and FM stations until there was a high penetration of digital receivers. Then, AM and FM operation would cease.

DAB is seen as resolving, once and for all, competition problems between AM and FM. If AM and FM are turned off, it certainly would.

*Steve Crowley is a consulting engineer with the Washington, D.C. firm of du Treil, Lundin & Crowley, Inc.*

## THE FAMILY CIRCUS



"When will it be my turn to listen to Daddy's earmuffs?"

# Formats

**Tony Fitzherbert**  
356 Jackman Avenue  
Fairfield, CT 06430

Changes in programming status; reported by NRC members and others

WCGI-1390, as noted in a past column found itself embarrassingly low in the Chicagoland ratings, so, according to Geov Parrish, its Black talk format has been dumped for Black oldies...and the station calls itself "Dustyradio". Other than that change, the format switches listed below reveal a boring potpourri of satellite programming, FM simulcasting, and business news....and the AM dial is turning into a Sargasso Sea of mediocrity. And entire staffs of on air personnel are helping to swell the nation's unemployment rate.

Other than Geov, Mike Riordan and Eric Bueneman provide us with updates. And Perry Crabhill, Jr. provides a Dial Scan from Winchester, VA. Here we go.....

680 WCNN GA North Atlanta	- CNN Network news (EB).
750 WSB GA Atlanta	- Now all news/talk, AC music gone (EB).
770 WAIS OH Buchtel	- CWM (GP).
900 KOES TX Hamilton	- Spanish (GP).
910 KOXO CA Oxnard	- Spanish (MR).
910 WKEQ KY Burnside	- Satellite traditional CWM (GP).
920 WGHQ NY Kingston	- Satellite adult standards (GP).
930 WMGR GA Bainbridge	- Satellite rock oldies (GP).
930 WZNN NH Rochester	- Now all news (GP). EX-WKOS, adult standards (TF).
980 KENY AK Kenai	- Talk (GP).
1010 KRNI IA Mason City	- Ex-KLSS, now jazz and classical// KHKE-FM, Cedar Falls, station was donated and cannot be sold for three years (GP).
1050 WXTH AL Alexander City	- CWM//FM(GP).
1050 KOFY CA San Francisco	- SMN Kool Gold (MR). Sale of FM left station with no studios, so they // KOFY-TV, Channel 20 for a week! (GP).
1080 WEEP PA Pittsburgh	- Business news (GP).
1110 WUHN MA Pittsfield	- Satellite rock oldies (GP).
1120 WBNM GA Gordon	- Business news to Macon (GP).
1140 KPRW OK Oklahoma City	- Business news (GP).
1150 WCNX CT Middletown	- News/talk (Tony Fitz).
1170 WKIQ FL Bushnell	- Standards //WKFL(GP).
1230 WTKX FL Pensacola	- Satellite rock oldies (GP).
1230 KKGR OR Gresham	- News/talk(GP).
1240 WKDA TN Nashville	- All news (GP).
1310 WDPM OH Alliance	- EZL (GP).
1320 KGMG CA Oceanside	- EZL(GP).
1330 WNIX MS Greenville	- Satellite rock oldies (GP).
1360 WTSR GA Rome	- Southern Gospel 0900-1200, otherwise CWM//FM (EB).
1380 WCQL NH Portsmouth	- News/talk(GP). With 930, Rochester, that's two news/talk stations in this market (TF).
1380 WGUS SC North Augusta	- Traditional CWM (GP).
1390 WWOD VA Lynchburg	- Satellite all news (GP).
1400 KBLX CA Berkeley	- Now Black AC//FM (GP).
1440 WCDL PA Carbondale	- Adult standards (GP).
1450 WSMQ AL Bessener	- Gospel (GP).
1470 WWWM OH Toledo	- Ex-WOHO, now AC // FM (GP).
1490 KDB CA Santa Barbara	- Now KSPE, Spanish, some English programming (MR).
1500 WDPC GA Dallas	- back with CWM/Gospel (EB).
1520 KFXX OR Oregon City	- Talk, sports (GP).
1550 KSVY WA Opportunity	- Fine arts (GP).
1560 WSQR IL Sycamore	- CWM (GP).
1570 WBUG NY Amsterdam	- Ex-WKOL, CWM//WLKO(GP).
1580 KOKB OK Blackwell	- News/talk(GP).
1590 KHIT NV Sun Valley	- News/talk(GP).
1600 WXLN KY Eminence	- Full service info and religion(GP).

Thank you very much to our contributors. When you send in items for this column, could you please indicate the city of license? This would help cut down the time needed to put the column together, as I prepare it at work, during lunch time. Thank you very much....and, as we are into another DX season, do get your format changes in to your Formats column.

73's

12

## R390A AGC/BFO Mods ...By Dr. Dallas Lankford

For Improved SSB and CW

Two things prevent an R-390A from performing well on SSB and CW signals - unsuitable attack and release times for SSB and CW, and low BFO amplitude at the diode detector.

The usual way to demodulate SSB or CW is with a product detector. There are two ways to add a product detector to an R-390A. The BFO circuit can be converted to a product detector as described by Capt. Paul Lee in his 1968 CQ article, "Modifying the R-390A receiver for SSB," pages 55-58; see also a variation using relay switching which includes the R-390A noise limiter function with the product detector as described by Eugene Hubbell in his 1974 Ham Radio article, "Improving the R-390A product detector," pages 12-15. Or an external product detector can be connected to the R-390A 455 kHz IF output, such as one of the military sideband converters, a Hammarlund HC-10 converter, or a home built product detector like the one described by Alan Nusbaum in his November 1985 Ham Radio article, "External product detector improves receiver performance," pages 107-111.

However, there are disadvantages to these approaches. Lee's product detector requires that an R-390A mainframe be rewired, which means that you cannot use that mainframe without a specially modified IF subchassis. In addition, the noise limiter is bypassed, and Hubbell reported that there was a regenerative effect which occurred at the BFO frequency, resulting in a peak in the audio response. Hubbell implemented Lee's mod with a relay, which eliminated the regenerative effect. He also expanded Lee's mod by making the noise limiter operational with the product detector. But Hubbell's mod requires a special Potter and Brumfield relay (type PWSLS, 2 mA, 10K ohm coil) which now costs about \$100 retail, and the relay must be mounted in a 7 pin miniature socket added to the IF subchassis. Hubbell's approach can be implemented with an ordinary low voltage relay, but then you will have to provide additional low voltage, high current, DC for the relay coil, and use a BJT to switch the relay on and off with the switched 200 volt B+ line. There is hardly enough space to mount the necessary additional components. The military SSB converters are almost always large and heavy, and generally use many tubes (CV-157: 44 tubes, 125 lbs.; CV-1982: 23 tubes, mostly nuvistor, 30 lbs.). I have been told that there is a small solid state SSB converter made by McGee Industries, but I have never seen one. The Hammarlund HC-10 converter (only 10 tubes) requires precise frequency alignment for whichever sideband you want to use, or a wider than necessary R-390A bandwidth if you want to switch sidebands quickly. If you use a wider than necessary R-390A bandwidth, then adjacent QRM activates the R-390A AGC and degrades the performance of the HC-10. Finally, none of these product detector mods or add-ons does anything about the unsuitable R-390A attack times and release times for SSB and CW.

For SSB an attack time of 2 milliseconds (mS) is often stated as optimal, while release times of 500 mS for fast SSB release and 2 seconds (S) for slow SSB release are considered suitable. My goal was to modify the R-390A AGC in such a way that attack times for all three AGC speeds (FAST, MED, and SLOW) were about 2 mS, and the MED and SLOW release times were about 780 mS and 2 S respectively.

My starting point was Cornelius' AGC mod, which speeded up attack times for FAST and MED. The original Cornelius AGC mod removed R545, replaced R546 with a back pointing diode, and replaced R547 with a 10K ohm resistor. I developed a better variant of Cornelius' AGC mod by leaving R545, R546, and R547 unchanged, and adding two back pointing diodes, one across R546, the other across R547.

To improve the SLOW attack time, it was necessary to redesign the SLOW AGC circuit. In the SLOW AGC position, C551 is connected across the plate and grid of V506A. By unsoldering the wire at pin 1 of V506A (which connects lug 8 of S107 and pin 1 of V506A) and resoldering it to a convenient nearby ground lug (pin 8 of V506), the SLOW attack time problem was mostly solved. But with this change the SLOW and MED attack and release times are identical. So a new capacitor C1 was inserted from lug 9 of S107 to ground (after removing the original ground connection). Now in the MED position C1 is in series with C551, which permits the MED release time to be adjusted to a smaller value than the SLOW release time.

I don't like modifying an R-390A mainframe as a matter of general principle. However, the addition of C1 does not prevent using an unmodified IF subchassis. The MED release time with an unmodified IF subchassis will not be as slow as with an unmodified mainframe, but that is hardly noticeable.

At this point in my experiments the SLOW release time was about 500 mS, but a slow release time of 2 S was desired. I tried adding additional capacitance in parallel with C551, but that caused a slower SLOW attack time (and the SLOW attack time was already too slow at about 10 mS). To make the SLOW release time slower without increasing the SLOW attack time, R547 was removed (leaving only the back pointing diode in place of R547). I learned the hard way that this diode must have a very high back resistance, and that 1N34A and 1N270 germanium diodes are not suitable. A 1N4148 or 1N914 is suitable because they have a reverse leakage current rating of 0.025 microamps at the maximum rated voltage of 75 volts, which works out to a back resistance of about 3000M ohms. Thus, the AGC capacitors are forced to discharge through the 1.77M ohm combined resistance of R201 and R234 (a

voltage divider for the 6DC6 RF amplifier grid AGC voltage).

After R547 was removed the SLOW release time was too slow, about 3.7 S. To adjust the SLOW release time to about 2 S, C551 was replaced with C2. My final AGC mod is shown on the following simplified schematic. I used a scope to measure the release times, and confirmed that the release times can be calculated from the conventional  $T = R \cdot C$  time constant formula (when R is in megohms and C is in  $\mu F$ , T is in seconds). So it is easy to select the values of C1, C2, and even C548 for whatever release times you desire. The time constant formulas are as follows:  $T_{FAST} = 1.77 \cdot C548$ ,  $T_{MED} = 1.77 \cdot \left( C548 + \frac{C1 \cdot C2}{C1 + C2} \right)$ , and  $T_{SLOW} = 1.77 \cdot (C548 + C2)$ .

For unchanged C548 ( $= 0.1 \mu F$ ), C1 =  $0.47 \mu F$ , and C2 =  $1.22 \mu F$ , the measured and computed release times were about 180 mS, 780 mS, and 2.3 S for FAST, MED, and SLOW respectively.

Replacing C551 by the smaller capacitance ( $1.22 \mu F$ ) had the beneficial effect of speeding up the SLOW attack time to about 6 mS. The MED and FAST attack times were about 3 mS and 1 mS respectively. The SLOW attack time is not quite as fast as I wanted, but it is the best that can be done without more substantial modifications.

Like the Cornelius mod, my AGC mod increases AGC line voltage, which causes higher carrier level meter readings and reduces the signal levels at the diode detector, thus reducing audio output. The reduced audio output is not a problem because an R-390A has plenty of reserve audio gain. The increased carrier level meter readings should not be a problem for most R-390As. But if the meter pins on strong signals, there are two cures. Unsolder one of the meter leads and add one ohm resistors one at a time until the meter no longer pins on strong signals. The carrier level meter has a very low internal resistance, about 17.4 ohms nominal, so a small additional resistance will cause a large change in meter readings. The other cure is to replace R524 (680 ohms nominal) by a larger resistor. The best solution here is to add a 500 ohm, 2 watt, ten turn, wire wound resistor in series with R524. In effect, this adds a meter sensitivity adjustment. The reduced signal levels at the diode detector has the beneficial effect of reducing distortion on SSB and CW.

The improvement in SSB quality caused by reduced signal levels at the diode detector, the difficulty of converting an R-390A BFO circuit to a product detector, and the defects of add-on converters motivated me to examine the possibility of further improving the diode detector for SSB and CW. In his May 1956 QST article, "Reception with product detectors," Murray Crosby, W2CSY remarked that proper reception of SSB may be obtained with a diode detector provided the signal amplitude entering the diode detector is less than or equal to the BFO amplitude.

I added a 47 pF 500 volt mica capacitor in parallel with the 12 pF BFO injection capacitor C535, and was pleased that most of the residual SSB distortion was eliminated. But when I measured the signal and BFO amplitudes I was surprised that a 50 dB unmodulated RF signal produced a 4 volt peak signal at the diode detector, and that the BFO was already 12 volts peak with the 12 pF injection capacitor alone.

Wally Chambers, K5OP provided the answer to this perplexing situation. In the 49th (1972) and 54th (1977) editions of *The Radio Amateur's Handbook*, page 239, it is said that the BFO signal amplitude should be 5 to 20 times greater than the strongest SSB or CW signal at a diode detector if distortion is to be minimized. The addition of a 47 pF capacitor across C535 increased the BFO amplitude at the diode detector to about 25 volts peak, which makes the BFO amplitude about 6 times greater than a 50 dB unmodulated RF signal. There is apparently some room for additional improvement. Wally suggested that replacing R530, the 22K ohm BFO plate resistor, with a 12 mH choke might further increase the BFO output, but I have not tried that. The 22K ohm BFO plate resistor is a large 1 watt resistor which is difficult to remove, and there is not much space underneath or beside the BFO bellows coupler for a 12 mH choke.

For Capacitors C1 and C2 I used 250 volt mylar, radial leads. For a  $1.22 \mu F$  capacitor I used a  $1 \mu F$  capacitor and a  $0.22 \mu F$  capacitor in parallel. I used 1N4148 diodes from a Radio Shack package marked 1N914.

To add C1 you will need to remove the R-390A front panel. Unsolder and remove the end of the insulated stranded wire, nominally white insulation, at pin 9 of S107. Clip one or more loops of cable lacing which secure the white wire to determine if the other end is connected to lug 1 of the LIMITER potentiometer R120. If so, the white wire may be removed completely. Tie the loose end(s) of the cable lacing. If desired or necessary, use new cable lacing to tie new loops where the old loops were removed. If the white wire does not terminate at pin 1 of R120, or if you do not want to remove the white wire, you can add a small insulated 4-40 standoff to the top screw of S107. If there are not enough screw threads to mount the insulated standoff securely, you will have to remove the nut and/or lock washer. And if the nut and screw threads are painted with varnish, you may have to remove S107 from the front panel to access the screw head. A hot soldering iron tip can be used to soften the varnish so that the nut can be removed without stripping the screw head or rounding off the nut (they are small and nominally brass).

R546 is usually connected to pin 1 or 2 of socket XV509 and to an insulated standoff. It is easy to add a diode across R546. The cathode lead of the diode can go to either pin 1 or pin 2 of XV509, and the anode lead of the diode goes to the insulated standoff.

R547 is usually connected to pin 2 of socket XV506 and to an insulated standoff. How easy it is to remove R547 depends on the order in which the other wires are mounted on the insulated standoff. You may have to temporarily remove other wires to access the R547 lead. Be careful uncrimping the lead of R547 at pin 2 of XV506. It is easy to break a tube socket lug. The cathode lead of the diode goes to the insulated standoff, the anode lead to pin 2 of XV506.

C551 is not removed from the IF subchassis, and one lug of C551 is used as a tie point. Remove C548. One end is usually connected to a ground lug beside XV509, the other end to one of the C551 lugs. Save C548 in case you want to undo my mod. Unsolder and remove the end of the insulated stranded wire, nominally white with blue and black tracers, attached to the same lug of C551 to which C548 was attached. Take a 4.5 inch length of insulated, stranded, tinned, #22 wire, strip 0.5 inch of insulation from one end, strip 1 inch of insulation from the other end, remove the solder from the lug of C551 to which C548 was not attached (this lug of C551 should have attached to it an insulated stranded wire which is nominally white with blue and red tracers), run the short stripped end of the stranded wire through this lug of C551, crimp it, and solder it. On the metal panel beside C551 there are two Phillips head screws which mount ground lugs in adjacent compartments. Remove the screws and reverse them. Mount two small insulated 4-40 standoffs on the screw ends. If there are not enough threads to securely mount the insulated standoffs, you will have to use longer screws. Mount C2 on the two insulated standoffs, attach the free end of the wire removed from C551 (white and black tracers) to one standoff, add a  $0.1 \mu F$ , 250 volt, mylar capacitor running from that same standoff to the ground lug from which C548 was removed (this  $0.1 \mu F$  capacitor replaces C548), attach the free end of the new stranded wire added to the other lug of C551 to the other insulated standoff, and resolder or solder all remaining added or changed lugs.

To add a 47 pF capacitor across C535 you must remove the BFO PTO bellows coupler. The spline set screws in the bellows coupler are painted with varnish. To remove them without stripping the splines, use a 45 watt 900 degree soldering iron to soften the varnish. Apply the hot iron tip directly to a set screw for about 30 seconds, and then apply reasonable pressure with a spline wrench. If the set screw does not release with reasonable pressure, apply the hot iron tip again for about 30 seconds.

You may wonder why Collins did not design the R-390A AGC this way and save us all the trouble of modifying the AGC for fast attack and slow release. And why did they use the Miller effect circuit for the SLOW AGC circuit? After all, the Miller effect SLOW release circuit in an R-390A has the disadvantage of being slow (200 mS) attack. I learned what I believe is the answer quite by accident: reliable SLOW release.

As I was developing my AGC mod, I discovered to my amazement that the SLOW release time got faster as the R-390A warmed up. I first noticed this effect by observing the carrier level meter. Did I imagine it? No. Scope measurements confirmed that the SLOW release time gradually decreased from about 2 S shortly after turn on from a cold start to about 500 milliseconds after 30 minutes. The cause was traced to a gassy 1st IF amplifier tube. It appears that Collins used the Miller effect SLOW AGC circuit because it is not effected significantly by gassy AGC controlled tubes.

That's the bad news. The good news is that it is relatively easy to determine if a gassy tube is degrading the SLOW release. Merely observe the carrier meter descent rate when you tune quickly away from a calibrator marker shortly after you turn on the R-390A from a cold start, and then observe the descent rate about 30 minutes later. If the descent rate is noticeably faster, then one or more gassy tubes may be the cause. The most likely candidates are the 1st, 2nd, and 3rd IF amplifier tubes. One of these three tubes was gassy in two out of three IF subchassis I have modified. Naturally, these bad tubes tested good on a tube tester. The RF amplifier and three mixer tubes are also candidates, as well as the 4th IF amplifier, AGC amplifier, and perhaps the AGC time constant tubes.

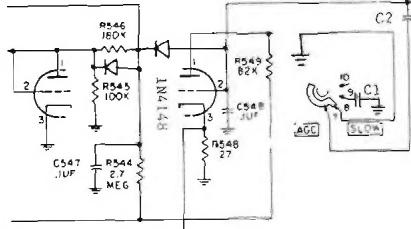
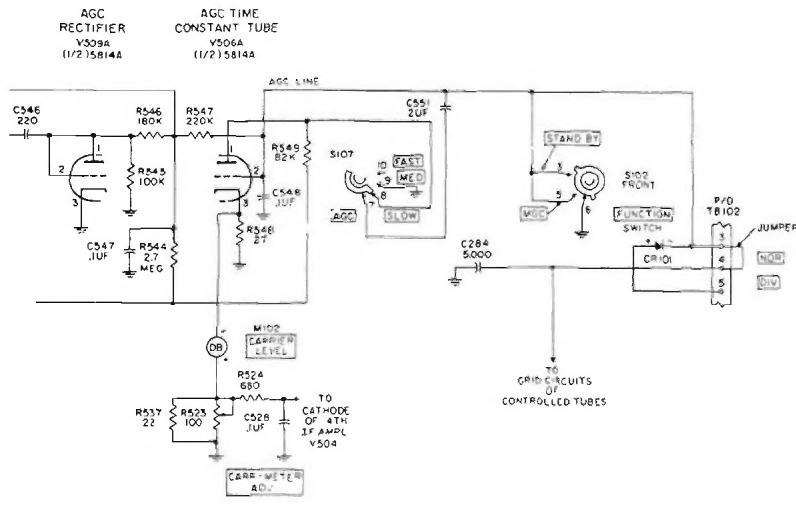
I was concerned that my AGC mod should not degrade the excellent AM performance of an unmodified R-390A. It does not. In two modified IF subchassis I included a 330K ohm resistor in series with the diode which replaced R547 and a switch across the resistor. In effect, this provided switched attack times, slow attack for AM and fast attack for SSB and CW. After considerable listening I have concluded that there is little benefit to switched attack times. A few listeners, like me, may hear a small amount of very low frequency (below 50 Hz) audio distortion on AM signals using the FAST AGC speed with fast attack with the 455 KHz IF output feeding an AM synchronous detector followed by a hi fi amplifier. But most listeners will not notice any difference between fast and slow attack. If you have no interest in SSB or CW, there is hardly any reason for you to do my mod because it does not improve AM performance. Of course, with the original R-390A AGC it is annoying that the carrier meter pins for several seconds when switching between SLOW and MED. That does not happen with my mod.

I would like to express my appreciation to Wally Chambers, K5OP for sharing his experiences modifying R-390A AGCs, and for discussing many of the ideas in these mods.

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## IN THE BEGINNING

BY JOHN D. BOWKER

THIS IS THE COMPLETE LIST OF U. S. BROADCAST STATIONS ON THE INDICATED FREQUENCY AS PUBLISHED BY THE FEDERAL RADIO COMMISSION IN 1934. "S" MEANS SHARED; "SH" MEANS SPECIFIED HOURS; "T" INDICATES TRANSMITTER LOCATION; "D" MEANS DAYTIME OPERATION ONLY; "U" MEANS UNLIMITED TIME.

Frequency (kc)	Call letters	Main studio and transmitter location	Power	Time designation
710, clear----	WOR	Newark, N.J.----- T-Kearny.	5 kw	---
720, clear----	KMPC	Beverly Hills, Calif.----- Chicago, Ill.----- T-Elgin.	500 w----- 25 kw	L-WOR. U.
730, Canadian exclusive.	WGN			

## Bandscans

Chris Cuomo

670 Third Avenue  
Verona, PA 15147-1349

Audible stations from a DX'er's location at given times.

CHRIS CUOMO  
LAKE BUENA VISTA, FL  
'85 Delco ETR  
June 23-29, 1990

various times

540 WGTG PINE HILLS	5	1050 WRDS Jacksonville	1
550		1060 WAMT Titusville	1
560 WQAM Miami	2	1070	
570 WTN Pinellas Park	2	1080 WFIV KISSIMMEE	5
580 WIBO ORLANDO	3	1090	
590		1100	
600 WUKY Jacksonville	1	1110 WTIS Tampa	3
610 WIZD Miami	2	1120	
620 WSUN St. Petersburg	3	1130 WWBF Bartow	2
630		1140 WBNQ ORLANDO	4
640 WHOF Wildwood	2	1150 WTMP Temple Terrace	2
650		1160	
660		1170 WAVS Davie	1
670 CMQ Arroyo Arenas, Cuba	1	1180 VOA Marathon	1
680 WLFF St. Petersburg	2	1190 WAJL PINE CASTLE	5
690 WPDQ Jacksonville	2	1200	
700		1210	
710 WAQI Miami	3	1220 WMJK KISSIMMEE	5
720 WZN Hernando	2	1230 WBN Lakeland	3
730 WTK Lake Placid	2	1240 WMMB Melbourne	2
740 WNZ Orlando	5	1250 WBAE Tampa	2
750		1260	
760 WEND Brandon	3	1270 WBZS EATONVILLE	4
770		1280 WIPN Lake Wales	2
780		1290 WTM Ocala	3
790 WLBE Leesburg	3	1300 WXXU Cocoa Beach	3
800		1310 WYNL Deland	2
810 CM-- unid Cuban	1	1320 WFK Coleman	1
820 WFA Largo	3	1330 WWA Lakeland	4
830		1340 WITS Sebring	2
840		1350 WLHQ Cocoa	1
850 WUF Gainesville	1	1360 WPNR CYPRESS GARDENS	5
860 WWD Cocoa	3	1370 WOCA Ocala	1
870 CM-- unid Cuban	2	1380 WBBQ St. Petersburg	4
880		1390	
890		1400 WPAS Zephyrhills	2
900 WMP Ocala	1	1410 WBBQ Leesburg	3
910 WPLA PLANT CITY	4	1420 WBRD Palmetto	1
920 WME Melbourne	1	1430 WLKF Lakeland	4
930 WLVE HAINES CITY	5	1440 WPRD WINTER PARK	4
940 WINZ Miami	1	1450 WJB Brooksville	1
950 WDM ORLANDO	5	1460 WBAR Bartow	2
960 WJCM Sebring	1	1470 WLVB Dunedin	3
970 WFLA Tampa	3	1480 WVCL OCONEE	4
980 WLUS Gainesville	1	1490 WSIR WINTER HAVEN	4
990 WDOU ORLANDO	5	1500	
1000		1510 WWBC Cocoa	2
1010 WCVN CRESTVIEW	4	1520 WTLN Apopka	3
1020		1530 WJBC Jacksonville	1
1030		1540	
1040 WHBO Pinellas Park	3	1550 WAMA Tampa	3
		1560 WTAI Melbourne	3
		1570 WTB ALBURNDALE	5
		1580	
		1590 WKB St. Petersburg Beach	1
		1600 WZTO WINTER GARDEN	4



1010 AM/Stereo 103.9 FM

DUNCAN SHAW  
SAN RAFAEL, CA  
July 26-31, 1990  
various times

540 KFUP Carmel

550

560 KSFO SAN FRANCISCO

570

580 KMF Fresno

590

600

610 KFRC SAN FRANCISCO

620

630

640 KFI Los Angeles

650

660 KTMN Window Rock, AZ

670

680 KMER SAN FRANCISCO

690 XETRA Tijuana, BN

700

710 KFIA Carmichael, NV

720 KJWN Las Vegas, NV

730

740 KIIS SAN FRANCISCO

750 KXL Portland, OR

760 KTFB San Diego

770 KPLA Riverbank

780 KRQW Reno, NV

790 KABC Los Angeles

800

810 KGO SAN FRANCISCO

820

830

840 KVEG Las Vegas, NV

850 KDA Denver, CO

860 KTRB Modesto, CA

870 KRM Laughlin, NV

880 KMC Gonzales

890 KDXI Saint George, UT

900

910 KNEW OAKLAND

920

930

940 KFRE Fresno

950

960 KAHL OAKLAND

970

980 KFWB Los Angeles

990 KIXA PITTSBURG

1000

1010 KIQI SAN FRANCISCO

1020

1030 KJQJ San Luis Obispo

KTWD Casper, WY

1040

1050 KOFY SAN MATEO

1060 KPAT Chico

1070 KNX Los Angeles

1080

1090 XEPR Tijuana, BN

1100 KFAT SAN FRANCISCO

1110

1120 KPNV Eugene, OR

1130

1140 KRAK Sacramento

1150

1160 KSL Salt Lake City, UT

1170 KLOK San Jose

1180

1190 KNBA VALLEJO

KEX Portland, OR

1200

1210

1220 KDFC PALO ALTO

1230

1240

1250 KIDS Santa Barbara

1260 KDT SAN FRANCISCO

1270 KPLY Sparks, NV

1280

1290 KBSL Chico

KAZA Gilroy

1300

1310 KDTA OAKLAND

1320

1330

1340 KDMY Watsonville

1350 KSRD SANTA ROSA

1360

1370 KEEN San Jose

1380

1390

1400 KBNP BERKELEY

1410

1420

1430 KJAY Sacramento

1440 KVIN NAPA

1450 KEST SAN FRANCISCO

1460

1470 KZUM Sacramento

1480 KWIN CONCORD

1490 KTGB PETALUMA

1500 KSJK San Jose

1510 KTID SAN RAFAEL

1520

1530 KFBK Sacramento

1540

1550 KERI SAN FRANCISCO

1560 KPMC Bakersfield

1570

1580

1590 KLIV San Jose

1600 KERA Tuba City

1610 KIS Newark

### The Broadcaster's Guide to DX

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850 AM 99.1 FM

**lutheran radio**

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St. Louis (Clayton) Missouri 63105

## Frequency Deviations

Observations of measured frequency deviations and associated activities

**Raymond F. Cole**

Rt. 3, Box 304

Cape Girardeau, MO 63701-9543

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There is a 90% chance of a 5.0 to 6.5 quake on the West Coast on the 21st. Second most probability: near Los Angeles on the 21st. There is a slim probability: near San Francisco or northward on the 22nd. There is a slim chance of a 12 hour "trigger time" delay on these. 9-17-90- Ray Cole

A 4.0 hit 35 miles south of San Jose at 9:59 my time here, followed by a 3.0 early the next morning at Menlo Park, perhaps a few hours earlier than stated in the note above. (Do a 4.0 plus a 3.0 equal a 7.0?)

The above projection was determined on 9-15-90, 9:45 AM, local time. The following were either given copies of the above note, or told about it by phone on the dates noted below.

On the 16th, by phone -	On the 18th, by note copies -	Harold Drysdale
Mike Gray	Sander True Value Hardware	First Assy. of God
Jim Berkland	(5 persons)	(4 persons)
On the 17th, by phone -	Howard Suedemeyer	Alvin Hatch
Don Pritchard	Southeast Missouri Machine Shop	On the 19th, by phone -
Edison Shrum	(3 persons)	Don Atkinson
Harley Rutledge	Patrick Cleaners	Brian Allworth
Al Ratkelis	(5 persons)	On the 20th, by phone -
		Bob Flick

These represent (not in order) a president of an investment corp., a minister, a physics professor, an emergency medical coordinator, three business owners, a T-V meteorologist, a radio talk show host, a highway engineer, a geologist, an author/geologist, a machinist, a retired electrician, and just friends. 29 witnesses who all know something about my past accuracy.

All of the preceding should speak for itself quite eloquently. This is written very late PM on the 24th. And the pressure is still on for the West Coast - so I expect more, probably next weekend, or as late as Tuesday.

A previous study covering 5/22 thru 7/6 showed 24 "warnings" here followed at the proper time intervals by 22 quakes westward (plus a "warning" right after that study period that did not result in a quake). (89%).

But the "experts" (who predict in terms of decades) say that there is no more risk of a quake on a given day than on any other day. And to predict risks of quakes on the West Coast based on findings in Missouri is simply too ridiculous to even mention. Especially - I find - when it comes from a source with no academic credentials.

I am 68 years old and my remaining time is very precious to me. I do not intend to continue spending all of my time and efforts on an unrecognized and thankless effort without funding for a badly needed net of monitors to cover a 120 mile seismic zone, without a data gathering capability, without a data processing capability, and without the means to further explore for better understanding of causatives. (And a grant application last Spring was denied). At times, even sufficient postage stamps have been a burden.

Nor do I wish to follow up on my invitation from the Moscow Academy of Science to participate in a research program there.

As things now stand, I intend to shut down this effort about March 1, 1991. After four and a half years I will say "enough is enough".

(I also had a letter prepared in event no quake occurred as per my projection, since I believe in reporting dismal failures as well as success. Herewith, that letter goes in the wastebasket.)

9-24-90 Ray Cole

# Musings of the Members

**Dave Schmidt**  
P. O. Box 11502  
Wilmington, DE 19850

Times are local per Muse.

Thoughts from NRC members... the opinions expressed in this column are those of the individual writer and do not necessarily reflect those of the editors, publishers, or the National Radio Club, Inc.

**JOSEPH K. JOHNSON - 3119 GIBBONS STREET - SAVANNAH, GA 31404-4910**

Greetings from America's first planned city! It's now October, won't be long until we'll be DX'ing everywhere. I was hoping to have an answer from ABC Talkradio about their rumored demise mentioned by Bob Anderson this past June, on his early morning talk program. Thus far, they haven't answered my letter. Not much to Muse about with the exception that I'll be keeping my eye on the local radio market for any future changes. That's it for now, so-long!

**CESAR OBJIO - CALLE ENRIRUE HENRIQUEZ 69 - SANTO DOMINGO, DOMINICAN REPUBLIC**

Hi, friends, here I am again, too soon, I think, as I am not used to Muse so often! But, happy to be here again! After a long delay, I received DX NEWS #28 July 30 issue on SEPTEMBER 4th by AIR MAIL, can you imagine that? But it was returned to Topeka according to a note written by the PLS and marked in green requesting the USPS not to delay it. But I may add, the US postal service is wonderful if you compare it to ours. For instance, Clasica Radio, the classical music station on 97.5 mhz. At the end of the month, they send me the up coming month program schedule by local mail. We are less than 3 miles away and I usually receive it at the end of the FOLLOWING month when it is already useless! (Someone else must want to read it then send it to you-DS) The important thing in DX NEWS, I read a short note about a Super 12-655 from Ray Cole, what a great idea? When I attended the Atlanta convention in '78, some members presented several changes they made on the Radio Shack TRF, one was a digital readout, another added a signal meter, etc., and they were not electronic engineers as far as I know, so why can't Radio Shack do that with the same circuit as the TRF? Now, my idea is for all club members interested in this type of set, write to Radio Shack regarding them to produce this unit again. What do you think? Lots of 73's to you all!

**RICK DAU - RR2, BOX 64 - OAKLAND, IA 51560**

Hello again from the Hawkeye State! The 4 day trip to MN that I hinted near the end of my last report did see the light of day, and it was worth it. On Sat. 8/4, I departed with Fargo, ND as my 1st stop. Around noon, I made a stop in Fergus Falls, MN. While there, I noted a sign on a one story building near I94 that read "The Future Home of KJJK-1090." Curious, I knocked on the door and was greeting by a friendly lady who filled me in on the details, namely that construction was proceeding well and that KJJK should be moving in around Oct. or Nov. After the visit, I headed west on I94 to Fargo. After unpacking, I visited KPNW-1200 where weekend DJ Dennis Swanson gave me a good tour. Dennis also mentioned he had worked for KCAM-790 (who ran a DX TEST this past season) about 10 years ago. After a stay in Fargo, it was back to Fergus' Falls for a stay there. In the afternoon, I went to my family's old vacation spot on the north shore of Otter Tail Lake and did a bandscan. Heard Duluth, Winnipeg, Regina (SK), Bismarck and even Omaha! Before leaving, I visited KBRF-1250 and was given a great tour by OpM Barbara Vangrud. She was interested in the issues of DX NEWS that I showed her and was given many promo items in return. 100 miles to the south, I stopped off at Montevideo's KDMA-1460 (the calls stand for Dawson-Montevideo-Appleton, the immediate cities the station serves), and PD Dwight Mulder and News Director Mike Dupree gave me a good tour and additional promo items, including a jar opener! I paid a late afternoon visit to NRC'er Bill Moser in Lake Preston, SD before continuing south to Sioux Falls. Before leaving, I visited KXRB-1000, where PD Ratt Reno showed me around. He was interested in the Radio West Loop I showed him and mentioned he had done some BCB DX in the past. Then, east to KWOA Worthington, MN where DJ Larry Rogers was getting ready to head out to a remote but did give me a tour. Overall, it was a fun 4 days! Next report will have details on my convention trip! 73's & so long from The Farm!

**PETE KEMP (KZIZ) - P. O. BOX 73 - BETHEL, CT 06801**

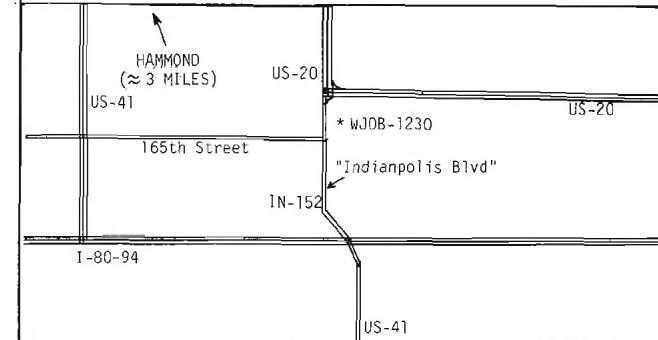
Greetings all. Hope that all had fun at Pittsburgh! Roger Barkley, formerly teamed with Lohman for 24 years will team up with Ken Minyard on KABC as of 10/1. Geri London's Horoscope Report on WLAD-800 has been moved from 2-3PM weekdays to 7-8PM Mon./Thurs. I wonder if she would be a good DX'er? (Yeah, ID the station before it gives the calls-hi!-DWS) President Bush has declared Radio Marti a success and has found \$16 million additional to upgrade programs. Stateside AM broadcasters fear additional retaliation from Castro's mega watt stations causing additional interference. Del DeMontreux, longtime fixture on WHN-1050 during CW days, later moving to WPAT, can now be heard on WNYN doing CW. So much for now!

**DAVE SCHMIDT - P. O. BOX 11502 - WILMINGTON, DE 19850**

That is everything received for the last 2 weeks, not much. We still have additional reports from Rick Dau & Pete Kemp for next time. Keep in mind, if you want to have a weekly column, then you've got to support it. All reports are welcomed, reporting DX or information which is of interest. Semi-locally, WTYO-1580 has gone dark, citing the general decline of revenue as the reason. One FM change, WXPN-88.9 Philadelphia is scheduled to switch to 88.5 on 10/9. That's it, reports are requested for the column! 73's!

## TOWER TIP IN-2

WJOB - 1230  
1000 WATTS  
HAMMOND, IN

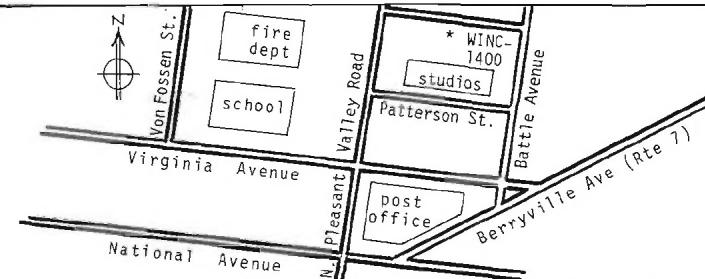


**WHAT TO LOOK FOR:** A single self-supporting tower right next to the WJOB studios. While parked under their tower, 1220 and 1240 kHz were clean of any splatter!  
**CONTRIBUTED BY:** John S. Bowker - Valparaiso, IN  
Send information about a.m. broadcast towers in your area to John D. Bowker, 14 Canoe Brook Drive, Princeton Jct., NJ 08550. Include a simple map (Bowker may re-draw it) showing major highways and any other terrain features near the tower(s). Tell how many towers, how they are laid out, and any other features that will help in spotting them.



## TOWER TIP VA - 1

WINC - 1400  
1000 WATTS  
WINCHESTER, VA



**WHAT TO LOOK FOR:** A single tapered tower at 520 North Pleasant Valley Road near the center of town (Interstates run all around Winchester just off this map in all directions). Studios are located at this site too.

**SUBMITTED BY:** Perry F. Crabill, Jr., Winchester, VA

Send information about a.m. broadcast towers in your area to John D. Bowker, 14 Canoe Brook Drive, Princeton Jct., NJ 08550. Include a simple map of the nearby highways and landmarks. Tell how many towers, how they are laid out, and any other information that will help in spotting each station.